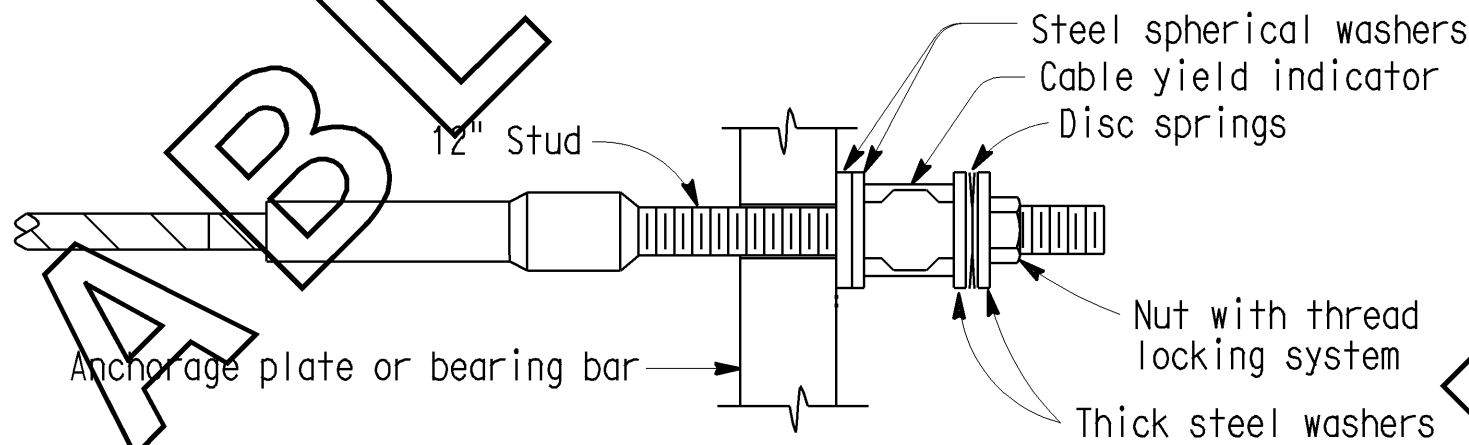


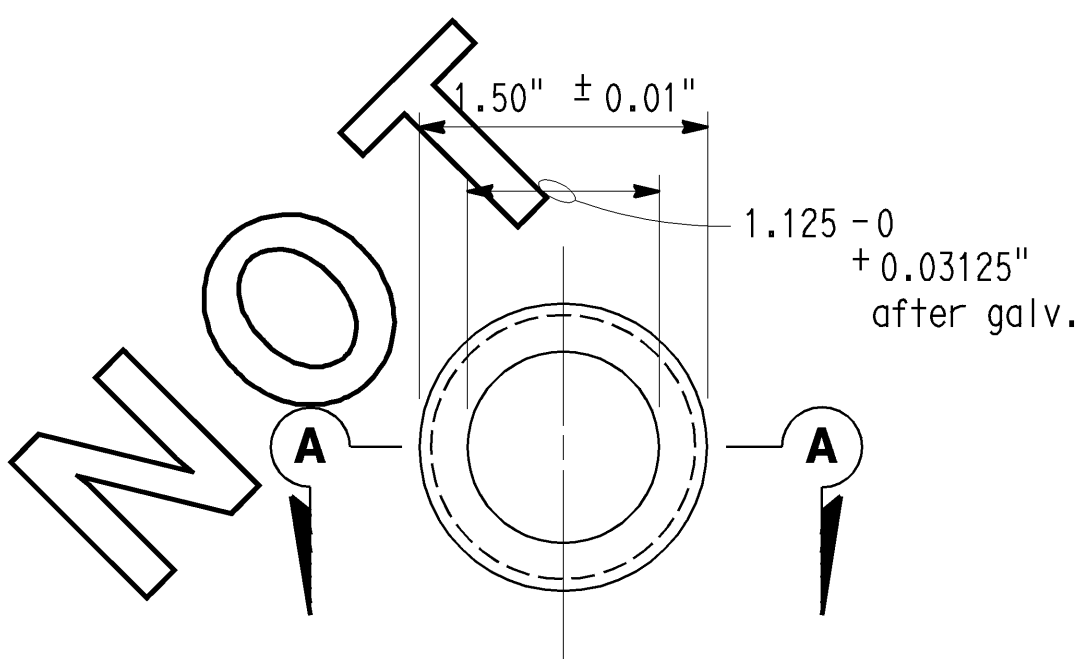
FIXED END (TYPICAL BRACKET ANCHOR)
(Single-end adjustment restrainer units)



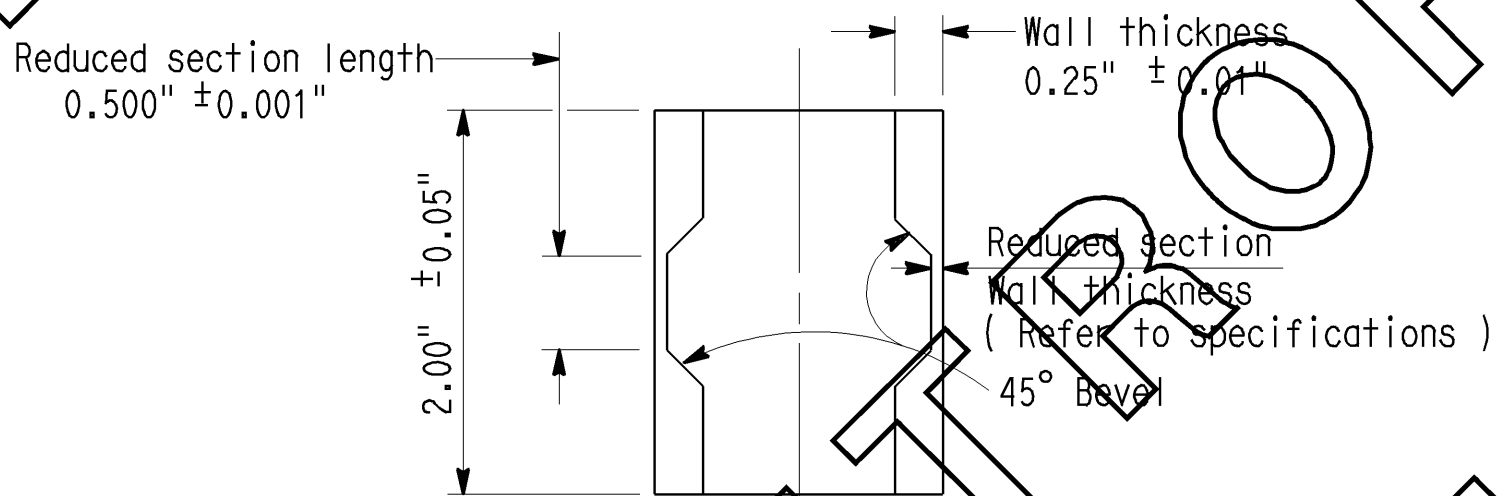
ADJUSTMENT END

CABLE END ANCHORAGE DETAILS
NO SCALE

Note: For locations of fixed and adjusted ends, see Structure Plans



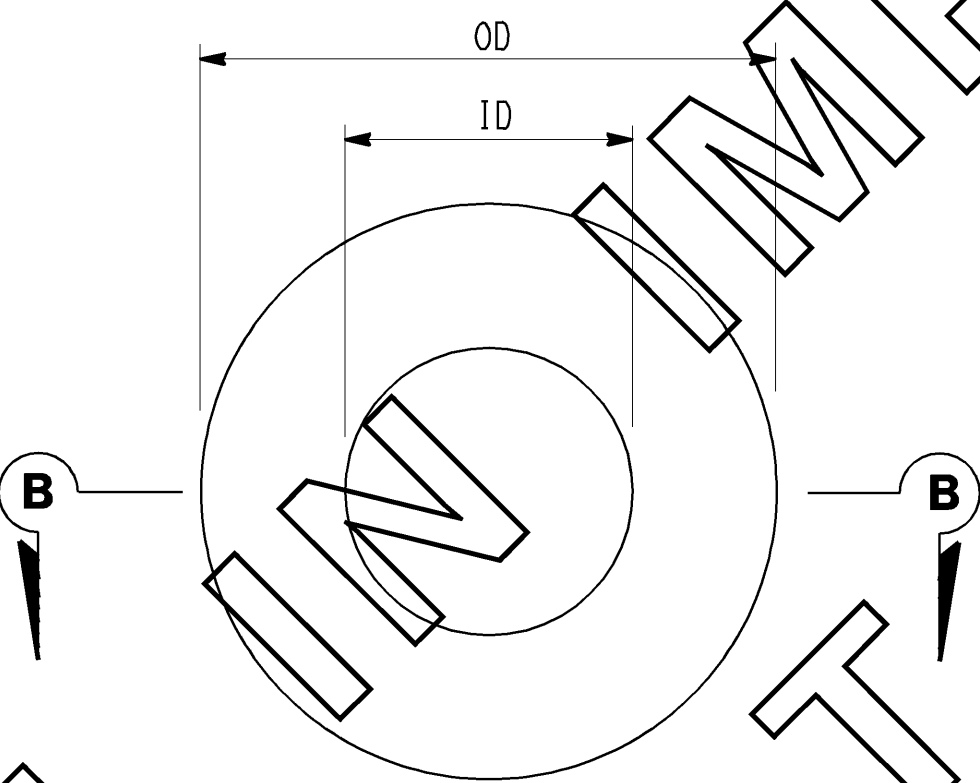
END VIEW



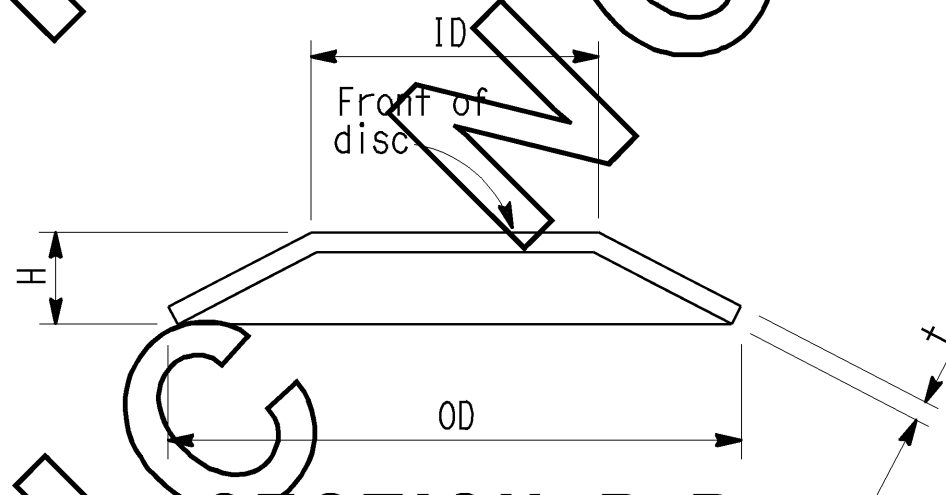
SECTION A-A

"All dimensions are before galvanizing except as noted"

CABLE YIELD INDICATOR

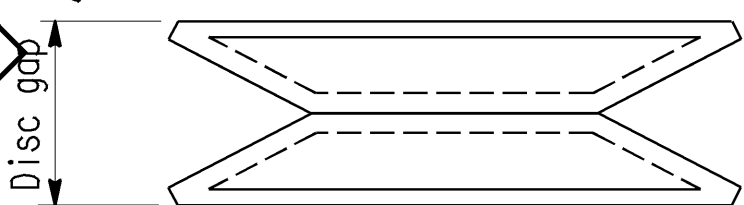


PLAN



SECTION B-B
(Single spring)

AS INSTALLED ON STUD



DISC SPRING

Note: For dimensions not shown, see table

DISC SPRINGS AND WASHERS

"All dimensions in inches, except as noted"

L *	DISC SPRING					STEEL SPHERICAL WASHER			THICK WASHER		
	ID	OD	t	H	COLOR CODE	ID	OD	Nom. thickness	ID	OD	t**
00.0 - 25.0	1.00	2.00	0.065	0.130	WHITE	1.19	2.25	0.50	1.03	2.00	0.25
25.1 - 31.9	1.00	2.00	0.084	0.136	RED	1.19	2.25	0.50	1.03	2.00	0.25
32.0 - 37.9	1.00	2.00	0.097	0.145	BLUE	1.19	2.25	0.50	1.03	2.00	0.25
38.0 - 45.0	1.25	2.50	0.120	0.180	YELLOW	1.31	2.50	0.50	1.16	2.00	0.25

* For limits of length L (ft), use effective length of cable, from face-to-face outer surfaces of anchorage plate or bearing bar. Refer to Bridge detail sheets for approximate length required.

** Minimum value

Note: All OD and ID dimensions for washers and disc springs shall meet the dimensional tolerances for harden steel washers, ASTM F436

RESTRAINER UNIT INSTALLATION PROCEDURE

- 1a. For typical 'girder to opposite girder' or 'bent cap to girder' restrainers with one adjustment end:

Place nut, washers and Thread Locking System on fixed end stud prior to tightening the cable.

The adjustment end shall be at the same end of the cable for all restrainers at a specific hinge or bent.

Install Cable Yield Indicator, spherical washers, disc springs, washers and nut on the adjustment end of restrainers as shown in "Cable End Anchorage Details". Discs shall be installed front to front as shown in "Disc Spring" detail.

Tighten the nuts on the cable from the Adjustment End of restrainer until the disc springs collapse and there is no disc gap remaining between the discs.

- 1b. For typical "U" or "V" shaped restrainers units with two adjustment ends: Install Cable Yield Indicator, spherical washers, disc springs, washers and nuts on both adjustment ends of restrainer as shown in "Cable End Anchorage Details".

Discs shall be installed front to front as shown in "Disc Spring" detail.

The ends of the cable must be adjusted simultaneously. Tighten the nuts on the cable from the adjustment ends of restrainer until the disc springs collapse and there is no disc gap remaining between the discs on either end of the cable.

2. Place thread locking system on adjustment end(s) after tightening the cable but before backing off the nut(s).

Back off the nut(s) at the adjustable anchorage(s) a distance equal to the maximum additional amount that the hinge is expected to open, relative to existing ambient conditions, as shown on the plans for movement rating.

STANDARD DRAWING

FILE NO. xs7-710-2	DESIGN	BY <i>S. SAHS</i>	CHECKED <i>R.J. ZELINSKI</i>	APPROVAL RECOMMENDED BY
DESIGN DATE 4/ 98	DETAILS	BY <i>S. SAHS</i>	CHECKED <i>R.J. ZELINSKI</i>	<i>Shamoon</i>
	SUBMITTED BY	<i>R.J. ZELINSKI</i>		DESIGN SUPERVISOR

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN

BRIDGE NO.

POST MILE

RESTRAINER UNIT - MISCELLANEOUS DETAILS

DS OSD 2147A (CADD 7/97)

ORIGINAL SCALE IN INCHES
FOR REDUCED PLANS

0 1 2 3

CU
EA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET OF